

ROUTING AND TRANSMITTAL SHEET

TO: (Name, office symbol, room number, building, Agency/Post)	Initials	Date
1. <i>EO/DGA</i>	<i>[Signature]</i>	5 NOV 1981
2. 	<i>[Signature]</i>	
3. <i>PSM</i>	<i>[Signature]</i>	
4. <i>[Signature]</i>		
5. TRAINING OFFICER/CMD	<i>[Signature]</i>	23 NOV 81

Action	File	Note and Return
Approval	For Clearance	Per Conversation
As Requested	For Correction	Prepare Reply
Circulate	For Your Information	See Me
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Coordination	Justify	

REMARKS

cy to 5 NOV 1981

① The people attending these seminars need to fill out Form 73 for training.

5-Del. This course is far too technical for Bob C or me - you might put it to better use elsewhere in the Directorate.

DO NOT use this form as a RECORD of approvals, concurrences, disposals, clearances, and similar actions.

FROM: (Name, org. symbol, Agency/Post)	Room No.—Bldg.
<i>[Signature]</i>	
	Phone No.

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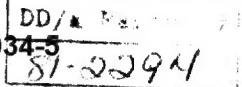
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Orig to OF/TRO per [redacted]
[redacted] suggestion. OF will
fill ODDAS space.
Me

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Approved For Release 2003/08/13 : CIA-RDP84B00890R000500030034-5

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ORD-1316-81

3 November 1981

DD/A REGISTRY

FILE: 1000-2294

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MEMORANDUM FOR:

FROM:



Information Systems Research Division
Processing and Analysis Technology Group
Office of Research and Development

SUBJECT: "Relational Data Base Systems" Seminar

1. ISRD/PATG/ORD will present a three-day seminar on "Relational Data Base Systems." The seminar outline is attached.

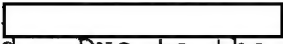
Dates: 17, 18, 19 November 1981
Time : Tuesday, 17 November, 0830 - 1630
Other days, 0900 - 1600
Place: Room 601
Chamber of Commerce Building
4600 Fairfax Drive (near junction of
Wilson Boulevard and Glebe Road)

2. The seminar objectives are to:

a. expose planners to the relational data base approach
and

b. identify problem areas in the use of the approach
before users adopt relational systems, thereby minimizing
the impact of system changes.

3. This seminar will use other DBMS models to illustrate the differences and peculiarities of the relational model. The seminar will not train a student in the use of ORACLE or INGRES, and is not an introduction to DBMS in general.

4. Attendance at the seminar is limited, and your office has been allocated 1 slot. If you cannot use your full quota, please advise  as early as possible so that others can be accepted. Due to the intensive nature and high technical content of the course it is mandatory that all nominees plan on attending every session.

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UNCLASSIFIED

SUBJECT: "Relational Data Base Systems" Seminar

5. Due to the limited parking space for students at the Chamber of Commerce Building, travel by personal automobile is discouraged, and every effort should be made to use the shuttle bus or Metro (Orange line, Balston Station, is close by).

6. Please call [redacted], with the names of your nominees by Friday, 13 November.



Attachment:
Course Outline

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OUTLINE - RELATIONAL DATABASE SYSTEM & DATABASE DESIGN SEMINAR

Duration : 3 days

4 sessions per day

Session # 1

1st day

9:00 AM - 10:30 AM

Generalities on DBMS and underlying File Access Methods

- * What is below a DBMS (FAMs), and what is on top of a DBMS
- * put information into computerized form, why ? (REVIEW)
 - what information ?
 - cost and advantages of computerized data ?
 - advances - TI versus IBM 650 comparison
 - memory RAM cost (1/4 Mbyte dynamic RAMs at \$500 ?)
 - 16 bit micros, 8 bit micros, 32 bit micros
- * modeling the real world
- * entity-relationship model
 - definition
 - key
 - diagrams (5)
- * database: intended properties
 - data independence
 - controlled redundancy, and consistency
 - security
 - consistency at access time
 - transaction, visibility, locking, and sharing
 - failing transaction
 - tradeoffs
 - transaction
- * levels of abstractions of database
 - real world, info model, conceptual db, physical db
 - conceptual db: different data models
 - dbms languages: ddl, dml
- * underlying file access methods (FAMs) - (REVIEW)
 - random access memories (RAMs) versus secondary storage
 - raw physical data
 - sequential FAM
 - FAM and overflow
 - hashing, searching, indexed file, cylinders & tracks, ISAM
 - structure of ISAM
 - B-trees for indexes, and VSAM

Session # 2
1st day
10:45 AM - 12:00

Comparison of main data models

- * hierarchical data models (5)
- * network data model (8)
- * relationnal data model (17)
- * Codasyl DBTG (9)
- * GIM2 (7)
- * RAMIS (3)
- * IMS (3)

Session # 3
1st day
1:30 PM - 2:45 PM

The relational or tabular approach

- * Relational database (7)
- * Relational Operators
- * Relational algebra & Completeness (15)
- * Primitives for a Table ORiented Query & UpdatE system (37)
- * Introduction to functional dependencies & normal forms (13)
(to be reviewed in session #9)
- * A word on multi-valued dependencies

Session # 4
1st day
3:00 PM - 4:15 PM

Languages for the relational or tabular approach

Algebra & Calculus

The SEQUEL language

- * Relational Calculus
 - formula
 - examples
 - domain calculus
- * Data Manipulation Languages (DML)
- * Comparison of algebraic and calculus oriented languages (2)
- * Example of Calculus language: SEQUEL-2
 - Query
 - DML
 - DDL
 - Control Statements
- * DB example
- * SQL-2 examples of queries
- * Complement of Session #4: comparison of SQL and QUEL

Session # 5
2nd day (Nov 18)
9:00 AM - 10:30 AM

SQL in general

DATABASE:

Personnel (name, description, organ, jobc, boss, proj, start, end

Events (event, start, end, geoarea)

Involvement (event, alias, description)

Geography (geoarea1, geoarea2, distance)

Whereabouts (name, description, geoarea, start, end)

55 "queries" or statements relative to this database

Sessions #6 and #7
2nd day (Nov 18)
10:45 AM - 12:00
1:30 PM - 3:00 PM

ORACLE/SQL

- * Going through the users' guide (RS1), with a critical eye
- * Some elements of comparison between SEQUEL-2
SQL2 (System R)
ORACLE/SQL
SQL/DS
INGRES/QUEL

Session # 8
2nd day (nov 18)
3:15 PM - 4:30 PM

Query-By-Example (QBE), IBM product

Going through the same queries (examples of the users' guide from RSI as reviewed in Session #6 & 7) but expressed in the QBE language

Session # 9
3rd day (Nov 19)
9:00 AM - 10:30 AM

DB Design (1) : 2 Different Design Methods

- * Review of functional dependencies (FDs) and Normal Forms (16
- * Decomposer
- * Issues paralleling 3NF decomposition
- * Design of relation & subschema
- * complementation
- * recall basic definitions
- * universal relation
- * redesign of a database
- * queries parts
- * example
- * notion of query set
- * lattice diagram
- * restrictions
- * lattice diagram in terms of restrictions
- * acyclic directed graph
- * algorithms and examples

Session # 10
3rd day (nov 19)
10:45 - 12:00

Database Design (2): Attribute based DB Design

- * Designing the set structure: ADBD to design subschemas and relations, using both reduction and decompositions

- * Designing the sequence/ ordering: an example, the choice for the primary key as a concatenation of important attributes in the relation; which specific permutation ?

Session # 11
3rd day (nov 19)
1:30 PM - 3:00 PM

Studies of comparisons between DBMSs

- * Case study # 1: the FOX choice
- * Case Study # 2: the Warner study
- * articles review:
New software for small systems
Datamation article on comparison of ORACLE, INGRES,
and SQL/DS
- * question answering session, correction of exercises

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Session # 12
3rd day (Nov 19)
3:15 PM - 4:30 PM

CONCLUSION of seminar

- * Concepts (1)
- * Implementation tree (1)
- * Secure DBMS (2)
- * guarantee of security (1)
- * integrity & security (1)
- * multi-level subownership authorization hierarchy (1)
- * Consistency (1)
- * Granularity of locks in shared DB (1)
- * tree structure for the data
- * concurrency control
- * lock a subtree / system R (2)
- * Important parameters for DDBMS design
- * Event counts / time stamped protocol
- * Double phased protocol: 3 modes (14)